Impact of lockdown during COVID-19 on lifestyle changes and physical activity of diabetic patients in Karachi, Pakistan.

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Abstract:

Background: In the pandemic of COVID-19, the lockdown was imposed in Karachi, Pakistan. Staying at home together with less physical activity could result in irregular diet management and a disturbed lifestyle in patients with type-II Diabetes Mellitus. We evaluated lifestyle changes, diet management, and physical activity in patients having Diabetes Mellitus Type-II in Karachi, Pakistan.

Methods: Patients with Type-II DM (n=150) were asked to complete a questionnaire containing 40 questions. These questions were divided broadly into diet, exercise, behavioral aspects, basic knowledge about telemedicine, and general questions. Data were entered on SPSS version 20 and analyzed their responses.

Result: Our data showed increased consumption of carbohydrates among 12% and increased frequency of snacks among 63.33% of respondents. Surprisingly, an increased intake of fruits and vegetables among 43.3% of patients was seen. Duration of activities was reported to be decreased by 43%. 25% of patients were observed to gain weight by 5-10%. Increased alcohol intake was noted by 45.3% and smoking was increased among 27.3% of patients. The study also observed that 86.66% of respondents agreed to be mentally unstable during the lockdown. Medicines were easily available to 94.7% of respondents. The evaluation of consultation showed that the majority of respondents 93.3% preferred the video consultation method.

Conclusion: Our results showed that during the COVID-19 lockdown period increase in carbohydrate consumption and processed foods, reduction in physical activity, increased alcohol intake and smoking and mental un-stability were noted. These are the factors that may enhance glycaemia. While few patients added more fruits and vegetables to their diet.

Keywords:

Diabetes Mellitus, COVID-19 Pandemic, Exercise, Diet, Carbohydrate

Introduction

Coronavirus (CoV) is a single-stranded enveloped virus with a positive sense Ribo Nucleic- Acid genome that infects the human respiratory system. It has been observed that it causes a mild infection in the upper respiratory

system in humans that have good immunity. But, two significant infections caused coronaviruses to lead to severe acute respiratory syndrome (SARS) in the year 2003 in China and a year later Middle East Respiratory Syndrome (MERS) in Middle Eastern countries. A novel coronavirus (Severe acute respiratory syndrome-Corona virus-2) was detected in December 2019 that caused coronavirus disease (COVID-19) in Wuhan, China. WHO confirmed COVID-19 as a pandemic on March 11, 2020. Also, worldwide 27,324 deaths were reported by March 27, 2020 [1]. Severe acute respiratory syndrome-Corona virus-2 is known to cause mild indications in the primary phase. The period is approximately 14 days however, it can lead to serious sickness that includes a serious inflammatory response, serious respiratory issues, multiple organ damage as well as shock. It has been noticed that the individuals that have higher chances to suffer from serious illness or death contain numerous features such as age factor as well as male gender, also having a medical history of heart disease, obesity, diabetes mellitus (Type-I or Type-II). Some of the research showed that patients with a medical history of heart disease as well as diabetes mellitus infected by COVID-19 got treatment in intensive care units [2]. Unfettered diabetes has occurred as a significant cause of death in COVID-19-positive individuals. Recent studies showed that lockdown is one of the reasons for the increased number of diabetic individuals as well as the consequences of unfettered diabetes. Lack of physical movement, changes in diet, difficulty in access to buy medicines, insulin, and glucose test strips as well as difficulty in access to reach out to consultants can be reasons. However, these reasons predict that these alterations in lifestyle could arise in a period of lockdown. Ghosh and co-workers conducted a study to observe that home-based stay together with a lack of physical movement during the time of lockdown can result in irregularity in the diet as well as in lifestyle in individuals having type-II diabetes in North India. One hundred and fifty patients were selected that were followed regularly before lockdown. The interview was conducted on the telephone on the 46^{th} day of lockdown related to modifications in lifestyle, anxiety as well as further queries regarding increased blood sugar. They observed that in forty-five days of lockdown there was an elevation in consumption of carbohydrates, reduction in exercise, reduction in self-monitoring of blood glucose, and occurrence of anxiety in individuals having Diabetes Mellitus (DM Type-II) and other elements that can increase blood sugar and blood pressure. Few affirmative modifications like the inclusion of fruits in the diet were noticed [3]. Alharthi and co-workers also evaluated the influence of lockdown on sugar control in patients having Diabetes Mellitus (Type-I) in Saudia Arabia. They used the continuous glucose evaluation method to assess that either there are any alterations in glycemic control vary among individuals who visited teleconsultation during the duration of lockdown vs individuals who didn't. One hundred and one patient having Diabetes Mellitus (Type-I) were included. They reported that 6 weeks lockdown duration did not affect glycemic control in patients having Diabetes Mellitus (Type-I) who didn't visit teleconsultation. On the other glycemic metrics improved markedly in individuals who visited teleconsultation. Seeking guidance from a consultant or teleconsultation results in an improvement in diabetic care [4]. In this study, we assessed that staying at home for a longer period together with less physical activity during lockdown results in irregular diet management and disturbed lifestyle in patients having Diabetes Mellitus Type-II.

Materials and methods

We screened Type-II DM patients in the outpatient setting of a tertiary care hospital. After obtaining their consent, patients were asked to complete a questionnaire containing 40 questions, which took about 12 minutes to complete. These questions were divided broadly into diet, exercise, behavioral aspects, basic knowledge about telemedicine, and general questions. Responses were collected on a spreadsheet and analyzed.

Statistical analysis

Data were entered on SPSS version 20 and analyzed their responses.

Results

The demographic data showed 57% (n=85) males, and 43% (n=65) females. However, the age group was defined with ranges of 10 years, and the majority were between 61-70 years of age, rest of the demographic detail is mentioned in table 1.

Table 1 Sociodemographic detail of participants

Sociodemographic detail of participants	Frequency (n)	Percentage %
Gender		
Male	85	57%
Female	65	43%
Age Groups		
30-40years	27	18%
41-50years	32	21%
51-60years	35	23%
61-70years	44	30%
71-80years	12	8%
Marital Status		
Married	123	82%
Unmarried	8	5.33%
Widow	19	12.66%

The data showed the change in the daily life of the participants, in that response same as before (100%) was responded by 56.7%, (n=85). Eating less than 25 -50% was reported by 22.7%, (n=34). Eating between 50 and 80% was reported by 20.7% (n=31). The changes in the timings of meals were also assessed. Data showed a majority of respondents agreed to early eating habits while 54.7% (n=82) reported keeping timings same as before. The frequency of meals taken was also assessed which showed that 82.7% (n=124) respondents kept the same

frequency and 13.33% (n=20) showed an increase in the frequency of meals taken. The evaluation of consultation showed that the majority of respondents 93.3% (n=140) used the video consultation method shown in Table 2.

Table 2 Change in daily routine

Variables	Frequencies(n)	Percentages%
Same as before (100%)	85	56.7%
Eating less than 25-50%	34	22.7%
%, Eating between 50 and 80%	31	20.7%
Any change in timings of meals?		
Remained same	82	54.7%
Delayed	4	2.6%
Early	50	33.33%
Occasionally delayed	14	9.33%
Frequency of meals taken		
Remained same	124	82.7%
Increased number of times meals taken	20	13.33%
Reduced number of times meals taken	6	4%
Consultation		
Video consult	140	93.33%
Phone call	6	4%
What's app chat	4	2.66%

The data was assessed deeply and respondents submitted the detail of their daily routine, mentioning the type of meal, and components of meals as part of their daily routine, the data showed increased consumption of carbohydrates (bread/rice) among 12% (n=18) respondents, an increased portion of fruits and vegetables 43.3%, (n=65) however increased the number of proteins (eggs, mutton, pulses, fish) was reported by 8.6% (n=13). No consumption of sugar was reported by 54% (81), and the increased amount was reported by 17.3% (n=26), a decrease in sugar intake was observed among 28.7% (n=43) as shown in table 3.

Table 3 Type of food consumed

Components of meals consumed	Frequencies	percentages
Remained same	54	36%
Increased consumption of carbohydrates (bread/rice)	18	12%
The increased portion of fruits and vegetables	65	43.3%
Increased the number of proteins (eggs, mutton, pulses, fish)	13	8.6%

Amount of sugar consumed		
No consumption of sugar	81	54%
Increased the amount	26	17.3%
Decreased the amount	43	28.7%
Frequency of snacking		
No Snacks	40	26.66%
Thrice a day	95	63.33%
More than thrice	15	10%
Quality of snacks		
Home-made snacks	130	86.66%
Processed foods	16	32%
Others	4	2.66%
Change in Appetite		
Remain same	2	1.3%
Increased by 25 to 50%	43	28.66%
Decreased by 25 to 50%	12	8%
Mental status		
Yes	130	86.66%
No	20	13.33%

The type of activities assessed during the pandemic respondent's change in activities and duration of activities was reported to be decreased by 43% (n=65), while decreased physical activities to 50% were reported by 10% (n=15), the sleep time was reported by 43.3% (n=65) respondents remained same, increased sleep time was reported by 24.6% (n=37) the detail is shown in table 4.

Table 4 Type of activities during Lockdown

Change in activities (Workout routine)	**Frequencies**	**percentages**
Every day	33	22%
Alternate day	85	56.66%
Thrice a week	18	12%
Weekend	3	2%
Duration of Physical activity		
Decreased by 25 to 50%	65	43%
Same as before	44	29%
Increased by 25%	261	7%
Increased by 50%.	15	10%
Sleep time		

Remained the same	65	43.33
Decreased	48	32
Increased	37	24.66
Remained the same	65	43.33
Change in weight		
No change in weight	68	45
Lost less than 5% of weight	45	30
Gained 5-10%	37	25

The assessment of smoking and alcohol intake status was also part of this study, 50% (n=75) showed no response to alcohol intake, and increased alcohol intake was noted by 45.3% (n=68). Smoking was increased among 27.3% (n=41), and no smoking was responded by 20% (n=30), however, a 50% increase in smoking was observed among 27.3% (n=41) shown in Table 5.

Table 5 Assessment of respondent's addiction

Variables in assessing the medicines	**Frequencies**	**percentages**
Easily on time	142	94.7%
Difficulty in getting medicine	3	2%
No availability of medicine	5	3.3%
Medicine taking time same as before	74	49.3%
Skipped doses	24	16%
Earlier than usual timing	52	34.7%
On time same as before	74	49.3%
Addiction/ Abuse		
No alcohol intake	75	50%
Increased in the amount of alcohol	68	45.3%
Decreased in the amount of alcohol	7	4.7%
Smoking status		
No smoking	30	20%
Increased by 50%	41	27.33%
Decreased by 25%	79	52.66%

Discussion

The study evaluated the type of activities and changes in their daily life as part of the lockdown situation during the COVID-19 pandemic. Considering the totality of the sample majority of the respondents were 57% males, compared with females 43% probably due to the lockdown and reduced social activities during that period which is similar to the study conducted [5,6]. COVID-19 affected every possible age group at a different level, however,

the majority of people were in the age group of 61-70 years of age, which is following the study that supports the results of our study, the majority of people affected by the lockdown were above the age of 50 years [7,8,9]. The lockdown scenario was tough during the initial breakdown of infection in the country when the social lives, lifestyle, and loss of jobs were observed in all communities [10,11]. The change in lifestyles and reduced physical activities were observed, also reported by various studies, to which the possible explanation could be due to the closure of the majority of social gatherings and restrictions to access the places [12]. The change in the daily life of the participants showed a change in their daily meals, and a change in diet around 25%, which is supported by 56.7% of respondents and our study can be compared with the literature that shows the change in activities and change of intake habits during COVID-19 scenarios up to 50% [13]. While 22.7% of total respondents agreed to reduce their meals while staying at home to avoid unnecessary weight gain, which is in agreement with the study [14]. In the assessment of the type of daily food consumed and components of meals, the data showed increased consumption of carbohydrates (bread/rice) among 12% and an increased portion of fruits and vegetables in 43.3%, Which is supported by the majority of studies which shows that the carbohydrate portion was reduced during the pandemic and lockdown situation due to the closures of gyms, parks, and other workout places [15]. The study also covered the status of mental health and the effects of lockdown on communities, multiple factors of daily life was affected and the general population is a great representative sample of that. The study also observed the difference in how the media reports and social media coverage also played the role in providing information regarding Viral infection and preventive measures, along with the health diet campaigns were also at a peak and the response of our study showed an increased the number of individuals who recently started the proteins meals (eggs, mutton, pulses, fish) 8.6% and no consumption of sugar was reported by 54% similarly reported by the studies [3]. The various Chinese studies reported the outbreak pandemic brought negative feelings, anxiety, and depression gradually at the same time negative impact on physical health [16]. The study also covered the status of mental health and the effects of lockdown on communities, multiple factors of daily life was affected and the general population is a great representative sample of that. The study also observed that 86.66% of respondents agreed to be mentally unstable during this period, and the majority of studies conducted to assess the mental health status also supported that COVID-19 had a crucial impact and caused depression and sadness in individuals. The emotional and psychological components are the sensitive factors that are easily triggered by daily habits/routines and deeply brought about by uncertain situations [17]. The various Chinese studies reported the outbreak pandemic brought negative feelings, anxiety, and depression gradually at the same time negative impact on physical health [18]. The induced smoking and alcohol intake status was also part of this study, 50% showed no response to alcohol intake, and increased alcohol intake was noted by 45.3%. Smoking was increased among 27.3%, no smoking was responded by 20% however 50% increase in smoking was observed among 27.3% similarly reported by the study [19].

Conclusion:

Our Patients showed greater lifestyle changes and decreased physical activity during the COVID-19 lockdown period. Few patients took care of their diet as well as physical activity by adding more fruits and vegetables to their diet with no consumption of sugar, having home-made snacks, increasing the duration of physical activity, taking anti-hyperglycemic drugs on time and adhering to consultation by video call could keep patients to maintain blood sugar control. On the other hand, those patients who consumed more carbohydrates, consumed processed foods as snacks, reduced exercise, increased alcohol intake and smoking, and with mental un-stability showed greater disruption in diet and lifestyle that may intensify glycaemia.

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Data Availability

All relevant data are available in the manuscript.

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Authorship statement

Conception and design of work, data collection, data analysis and interpretation, drafting the article, critical revision of the article was done by the team.

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Conflict of interest

The authors declare no conflicts of interests.

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Ethical approval was not needed as it was an observational and data collection and analysis study.